DISTRICT OF COLUMBIA
PUBLIC SCHOOLS

Office of the Chief Academic Officer

Summer 2010

Mathematics Summer Learning Packet

Grades 3-5

Introduction

The Mathematics Grades 3-5 Summer Learning Packet was created to provide students with activities that will allow them to practice and review mathematical skills and concepts. All of the activities are aligned to the DC Public Schools Mathematics Standards. Activities may be completed independently, with a parent or adult, with a sibling or friend. Because this packet includes activities for students in grades 3-5, parents should select those activities that are appropriate for their child/children. It is recommended that parents help pace their children through the packet.

Have a great summer!

Number Places

Answer the following questions using the number 35,489.

    a.   What number is in the hundreds place? _____

    b.   What number is in the ones place? _____

    c.   What number is in the thousands place? _____

    d.   What number is in the ten thousands place? _____

    e.   What number is in the tens place? _____

Factor Pairs and Multiples

List all of the factor pairs of 16.   List the first ten multiples of 4.

_____ and _____   ____ ____ ____ ____ ____

_____ and _____   ____ ____ ____ ____ ____

_____ and _____

Problem Solving

Mrs. Johnson ordered 3 pizzas for the students in her class. Each pizza has 8 slices. Mrs. Johnson has 22 students. Each student will get one slice of pizza. Did Mrs. Johnson order enough pizza? Will there be any slices left over?

Show your work.

Four hundred twenty-one thousand, five hundred six

$300,000 + 40,000 + 9,000 + 2$

Seventy-five thousand, forty-eight

$1,000,000 + 800,000 + 60,000 + 8,000 + 100 + 30 + 2$

What's the Pattern?

A. What are the missing numbers in the pattern?

39, 45, 51, 57, _____, 69, 75, _____

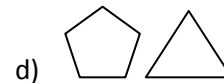B. Study the pattern. Choose the correct rule from the choices that follow.
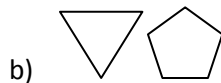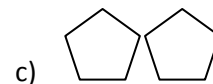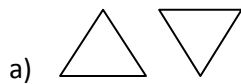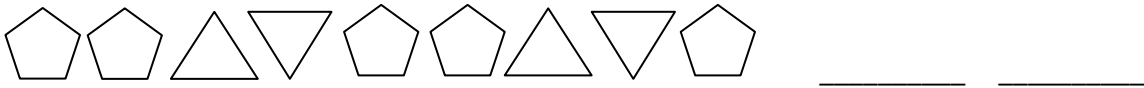
3, 6, 12, 24, 48

   a) Add 2
   b) Subtract 2
   c) Multiply by 2
   d) Divide by 2

C. What number makes the number sentence true?
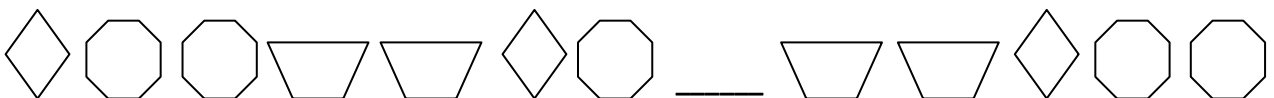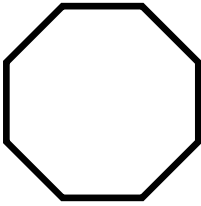
$8 + 4 + 6 = 11 + \square + 2$

Patterns with Shapes

Study the pattern. Which of the following shapes shown in a-d come next?

a)
b)
c)
d)

Draw the shape that is missing in the pattern.

Angles
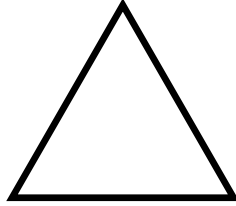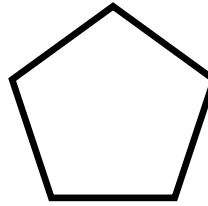
Octagon   Triangle   Pentagon   Rectangle

Use the shapes to help you answer each question below:

a) Which shape has only right angles?

The _____ has only right angles.

b) Which shape has only acute angles?

The _____ has only acute angles.

c) Name one shape that has obtuse angles.

The _____ has obtuse angles.

d) Which shape has the most angles? How many angles does this shape have?

The _____ has the most angles. It has _____ angles.

Points on a Grid
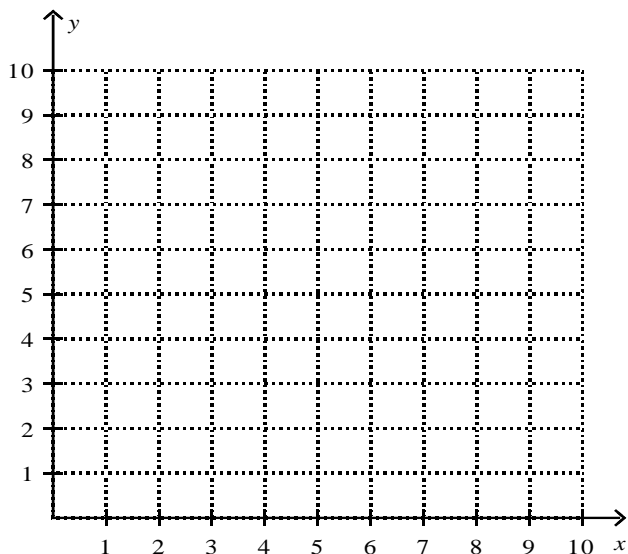
Use the ordered pairs to place points on the grid.

a) (2, 3) Label the point A.

b) (7, 8) Label the point B.

c) (8, 4) Label the point C.

d) (5, 1) Label the point D.

Connect the points in order. Be sure to connect Point D to Point A. What polygon did you make?

The polygon is a _____.

Building a Fence

Mr. Carter is building a fence for his backyard. The yard is the shape of a rectangle. The length of the yard is 10 feet, and the width is 6 feet. Find the perimeter and area of Mr. Carter's yard.

Show your work.

Read-a-thon

Gina is participating in her school's Read-a-Thon. She has recorded in her journal that she has read for 5½ hours. How many **_minutes_** has Gina read?

> **Show your work.**

Happy Birthday!

Carol and Mya are best friends. Carol's birthday is March 10ᵗʰ. Mya's birthday is exactly 3 weeks after hers. What is the date of Mya's birthday?

> The date of Mya's birthday is _____.

Baking Cookies

Rosa and her mother are baking cookies for a class party. Each batch of cookies should bake for 25 minutes. If the first batch of cookies are placed in the oven at 11:55 a.m., at what time should the first batch of cookies be taken out of the oven?

Show your work.

"Tiles in a Bag"
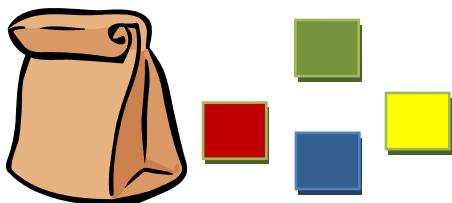
Marcus has 24 color tiles in a bag. There are three red tiles, seven yellow tiles, ten green tiles, and four blue tiles. If Marcus reaches into the bag to pull out a tile, which tile has the greatest chance of being picked? Why?

Write your answer here.

_____
_____
_____
_____
_____
_____
_____
_____

"Television Hours"

Dana surveyed her family members to find out how many hours of television each person watched in one week. Here are the results.

- Mom   6 hours
- Dad   8 hours
- Michael   12 hours
- Kimberly   16 hours
- Darnell   14 hours
- Dana   10 hours

Create a bar graph using the information above. Be sure to give your graph a title and to label each axis.

_____

"How Many Combinations?"

Dave's Ice Cream Shop offers one scoop of ice cream with one topping free. Jose likes vanilla, strawberry, and chocolate ice cream. His favorite toppings are sprinkles, nuts, and chocolate syrup. If Jose wants one scoop of ice cream and one topping, how many different combinations does he have to choose from?

Show your work.

Fractions, Decimals, Percents
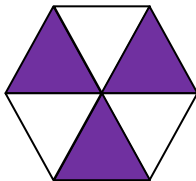
Use the figure above to answer each item.

    a)   What fraction of the hexagon is shaded?   _____

    b)   Write the fraction from answer a) as a decimal.   _____

    c)   Write the decimal from b) as a percent.   _____

Improper Fractions

Write each improper fraction as a whole number or mixed number.

    a) $\dfrac{12}{5} =$

    b) $\dfrac{18}{3} =$

    c) $\dfrac{27}{4} =$

    d) $\dfrac{65}{5} =$

    e) $\dfrac{73}{8} =$

Prime or Composite

In the list of numbers below, identify those that are prime numbers by marking *yes* or *no*.

a) 2   yes _____   no _____

b) 6   yes _____   no _____

c) 13   yes _____   no _____

d) 21   yes _____   no _____

e) 27   yes _____   no _____

f) 31   yes _____   no _____

g) 39   yes _____   no _____

h) 45   yes _____   no _____

i) 53   yes _____   no _____

j) 57   yes _____   no _____

Explain what makes a number a prime number.

_____
_____
_____
_____
_____
_____
_____
_____

Equivalent Fractions

Find two equivalent fractions for each fraction below.

a) $\dfrac{2}{3} =$

b) $\dfrac{3}{5} =$

c) $\dfrac{3}{8} =$

d) $\dfrac{7}{10} =$

Multiplying Decimals

Find the product.

$23.8 \times 7 =$	$4.9 \times 76 =$	$5.88 \times 44 =$	$0.67 \times 85 =$

Working With Variables

Evaluate when $y = 4$.

    a) $8y =$ _____

    b) $3 + y + 16 =$ _____

    c) $2y + 6y =$ _____

    d) $36 \div y =$ _____

What's the Rule?

Study each pattern. Write the rule.

Example: 2, 4, 6, 8, 10, 12, 14,…   Rule: __+2____

    a)   13, 17, 21, 25, 29, 33, 37, …   Rule: _____

    b)   4, 16, 64, 256, 1024, …   Rule: _____

    c)   79, 74, 69, 64, 59, 54, 49, …   Rule: _____

    d)   108, 117, 126, 135, 144, …   Rule: _____

Order of Operations

Evaluate

    a) $7 + (6 \times 8) + 10 =$ _____

    b) $(9 \div 3) \div 3 =$ _____

    c) $50 - 5 (20 \div 2) =$ _____

    d) $30 + (12 \times 3) + 34 =$ _____

    e) $(72 \div 6) + (48 \div 4) =$ _____

Dog Walking

Kevin gets paid $5.50 an hour for walking his neighbor's dog. Study the table below.

Hourly Wage for Dog Walking

Hours	1	2	3	4	5
Amount	$5.50	$11.00	$16.50	$22.00	$27.50

Kevin is saving his money to purchase a game for his Wii that costs $70.00. How many hours will he have to work before he has enough money to purchase the game?

Show your work.

Three-Dimensional Figures

Use the rectangular prism shown on the right to answer each question.
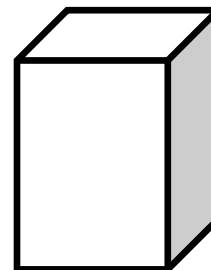
a) How many faces are there? _____ faces

b) How many vertices are there? _____ vertices

c) How many edges are there? _____ edges

d) What two-dimensional shapes do you see?

_____
_____
_____
_____

Transformations
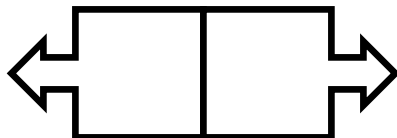
Identify the transformation that is shown above from one of the choices below.
   a) Translation
   b) Rotation
   c) Reflection

Explain your thinking.
_____
_____
_____
_____
_____

Drawing Lines

Draw the lines listed below. Be sure to label your lines.
   a) perpendicular lines
   b) parallel lines
   c) intersecting lines
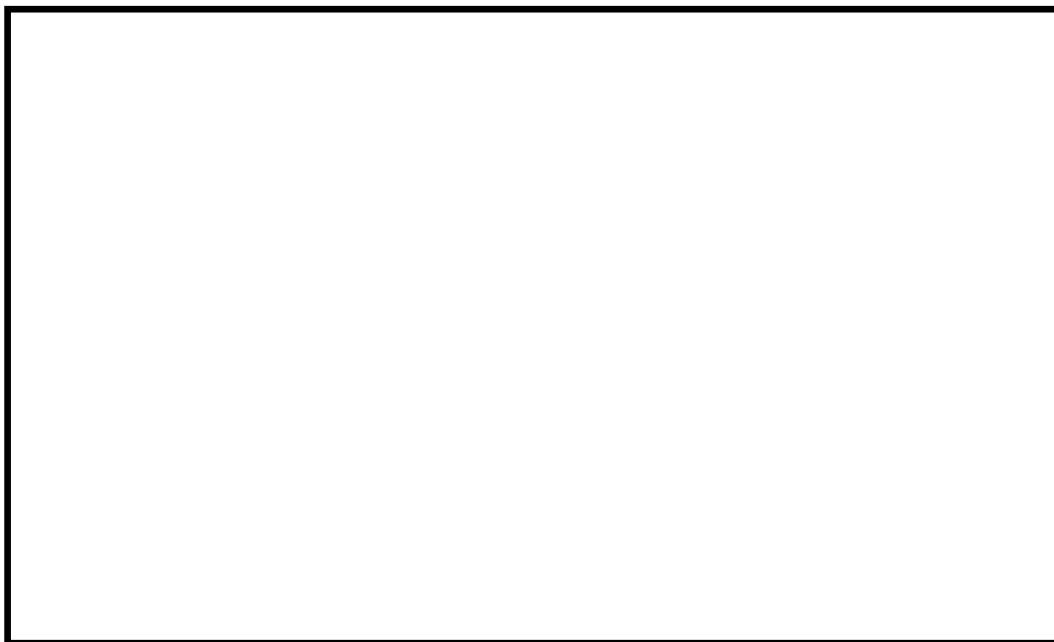
Where in your community or city do you see…

a) perpendicular lines?   _____

_____

_____

b) parallel lines?   _____

_____

_____

c) intersecting lines?   _____

_____

_____

What Are the Dimensions?

The fifth graders at Cooke Elementary School have a garden with an area of 48 square feet. List all of the possible lengths and widths their garden could be if the lengths and widths can only be whole numbers.

Show your work.

If the perimeter of the garden is 38 feet, then what are its dimensions?

Show your work.

Triangles and Area

A flag on a ship has a triangular shape with a base of 20 cm and a height of 36 cm.

What is the area of the flag?

Show your work.

Angle Measurements

Triangle ABC is a right triangle. $\angle$ A = 45°.

What is the measure of $\angle$ C?

Show your work.

A

B   C
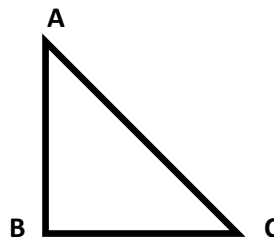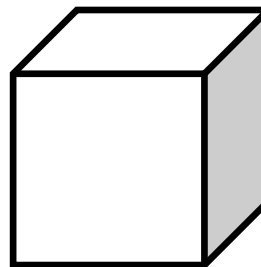
Volume

One edge of a cube measures 8 cm. What is the volume of the cube?

Show your work.

Finding the Mean and Median

Duane is the power forward on his school's basketball team. Listed below are the number of points he scored in the last 8 games.

Game	Points
1	18
2	24
3	30
4	24
5	20
6	16
7	20
8	32

What is the mean number of points Duane scored?

Show your work.

What is the median number of points Duane scored?

```
Show your work.
```

Representing Data

Mr. Williams records the daily attendance for his after school enrichment program. The attendance numbers for the last four weeks are listed below.

18, 10, 18, 20, 15, 15, 18, 20, 20, 19, 17, 15, 17, 12, 15, 15, 18, 15, 20, 19

Create a line plot representing the data showing how many children attended the program each day for four weeks. Be sure to give your line plot a title.

```
Show your work.
```

Find the median, mode, and range of the data above.

```
_____
_____
_____
_____
_____
_____
_____
_____
```

Based on the data, what statement can be made about the attendance for the last four weeks in the after school enrichment program?

_____
_____
_____
_____

Girls' City-Wide Track Competition

The Elementary City-Wide Track Competition was held at Banneker Recreation Center in May. The times from the girls' race are listed in the table above. Use the information in the table to answer these items:

a) Order the times from the slowest to the fastest time.

    _____   _____   _____
    _____   _____

b) Who came in second place?
    _____

Name	Time (in sec.)
Nicole	6.302
Alexis	6.320
Xiomara	6.231
Samantha	6.422
Shanae	6.242

c) How much of a time difference was there between the first and second place winners?

Show your work.

d) Who won the race?   _____

Legs and More Legs

While on vacation, Laura's family visited a farm. They saw some chickens and some sheep. Laura counted 42 legs. What are the possible combinations of chickens and sheep Laura's family saw? Use pictures, numbers, a list, or words to show your thinking.

Show your work here.

What is the greatest number of chickens Laura could have seen? _____
_____

What is the greatest number of sheep Laura could have seen? _____
_____

Is it possible to have seen an even number of chickens? Why or why not? _____
_____
_____

What patterns do you notice? _____
_____
_____

Activity from *Teaching Children Mathematics,* October 2008

Prime Numbers Up to 100

Eratosthenes was a Greek mathematician who devised a **"sieve"** to discover prime numbers. A sieve is like a strainer that people use to drain spaghetti when it has finished cooking. The water drains out, leaving the spaghetti behind. Eratosthenes's sieve drains out composite numbers and leaves the prime numbers behind. To find the prime numbers up to 100, follow the directions below the chart.

1					5				10
31									
					66				

- Complete writing the numbers in the 1 – 100 chart.
- Cross out (X) the number 1 because it is not prime.
- Circle the number 2. It is the smallest positive even prime number. Next, cross out every multiple of 2.
- Circle the number 3, the next prime number. Cross out all of the multiples of 3. Some numbers may have already been crossed out because they are multiples of 2.
- Circle the number 5, the next open number. Cross out all of the multiples of 5.
- Continue doing this until all the numbers through 100 have been circled or crossed out.
- List all of the numbers you have circled. The circled numbers are prime numbers.

_____

_____

More Likely Sums

If you roll one six-sided number cube, what are the chances of getting an even number? Make a prediction.

My Prediction   _____

Roll a number cube (or dice) 20 times. Record the results.

Roll	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Number																				

Now roll two number cubes and add the results. Are you more likely to get an even or an odd sum? Make a prediciton.

My Prediciton (Circle one)   even sum   odd sum

Roll the two number cubes 20 times. Record the sums.

Roll	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Sum																				

Now roll three number cubes and add the results. Are you more likely to get an even sum or an odd sum? Make a prediction.

My Prediciton (Circle one)   even sum   odd sum

Roll the three number cubes 20 times. Record the sums.

Roll	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Sum																				

What did you discover? _____

_____

_____

Why do you think that happens? _____

_____

_____

Activity from *Teaching Children Mathematics,* March 2009

A Trip to the Amusement Park

Your family planned a trip to Fibonacci Amusement Park. The rides can accommodate a lot of visitors at one time. Each boat in the Fraction Action Canal ride holds 12 people, and 3 boats can start the ride simultaneously. The ride takes 12 minutes. If the ride closes in exactly one hour, will all 192 people in line be able to ride through the Fraction Action Canal? Show your work. Explain how you arrived at your answer.

While walking through the park, you and a friend stop at Monica's Number Place to buy some souvenirs. You decided to purchase a pencil set and a backpack. You purchase a backpack and 2 sets of pencils for $22.25. Your friend purchases 2 backpacks and 1 pencil set for $37.00. How much does each backpack cost? How much does each pencil set cost? Show your work and explain how you arrived at your answer.

Adapted from *Teaching Children Mathematics,* October 2009